

Net Energy Metering: Policy and Controversy in Nevada

Distributed Energy Generation Workshop

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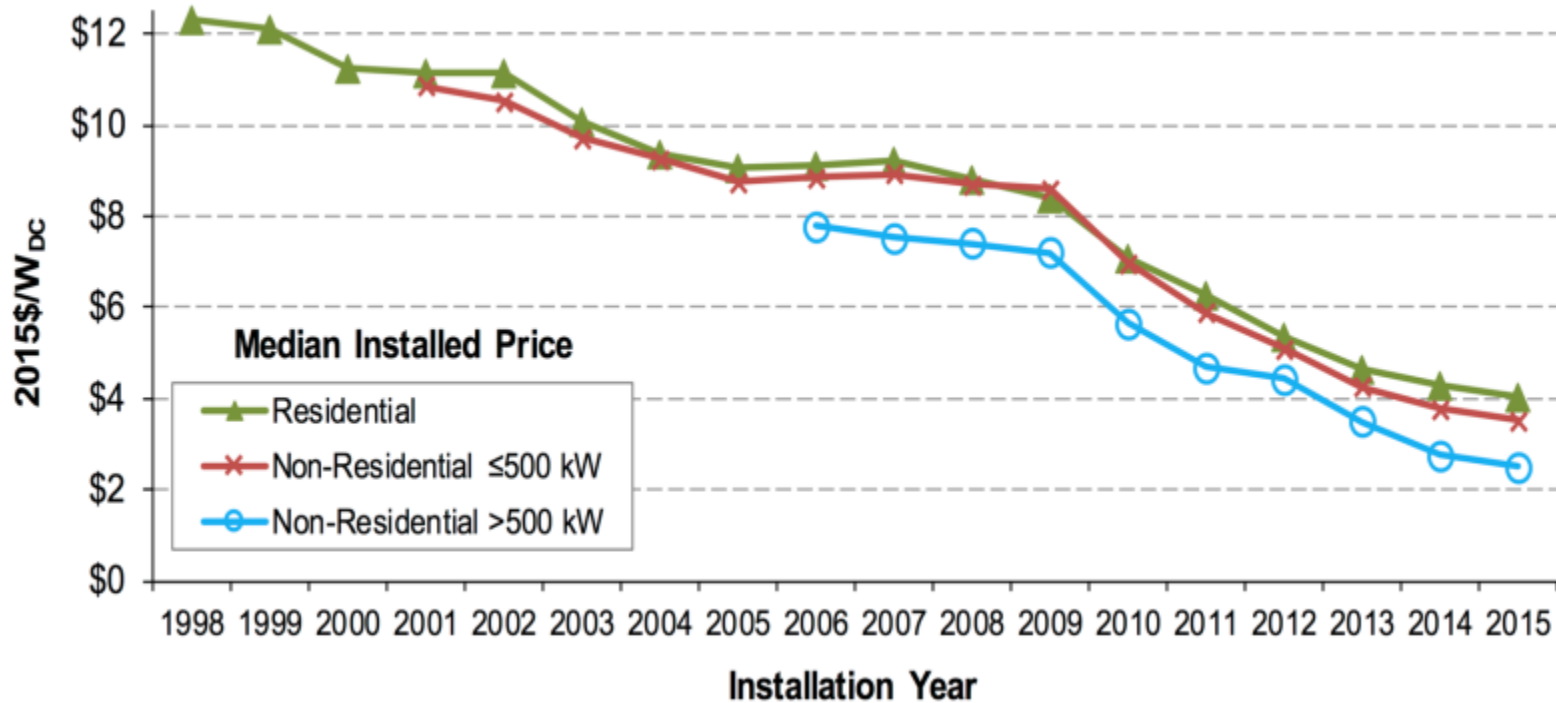
Department of Economics



Net Metering...

- ◆ NEM ~ DG ~ Rooftop Solar
- ◆ Started in the US in early 80s – modest growth for a long time
- ◆ Sudden growth in the recent years due to
- ◆ 44 States a version of NEM

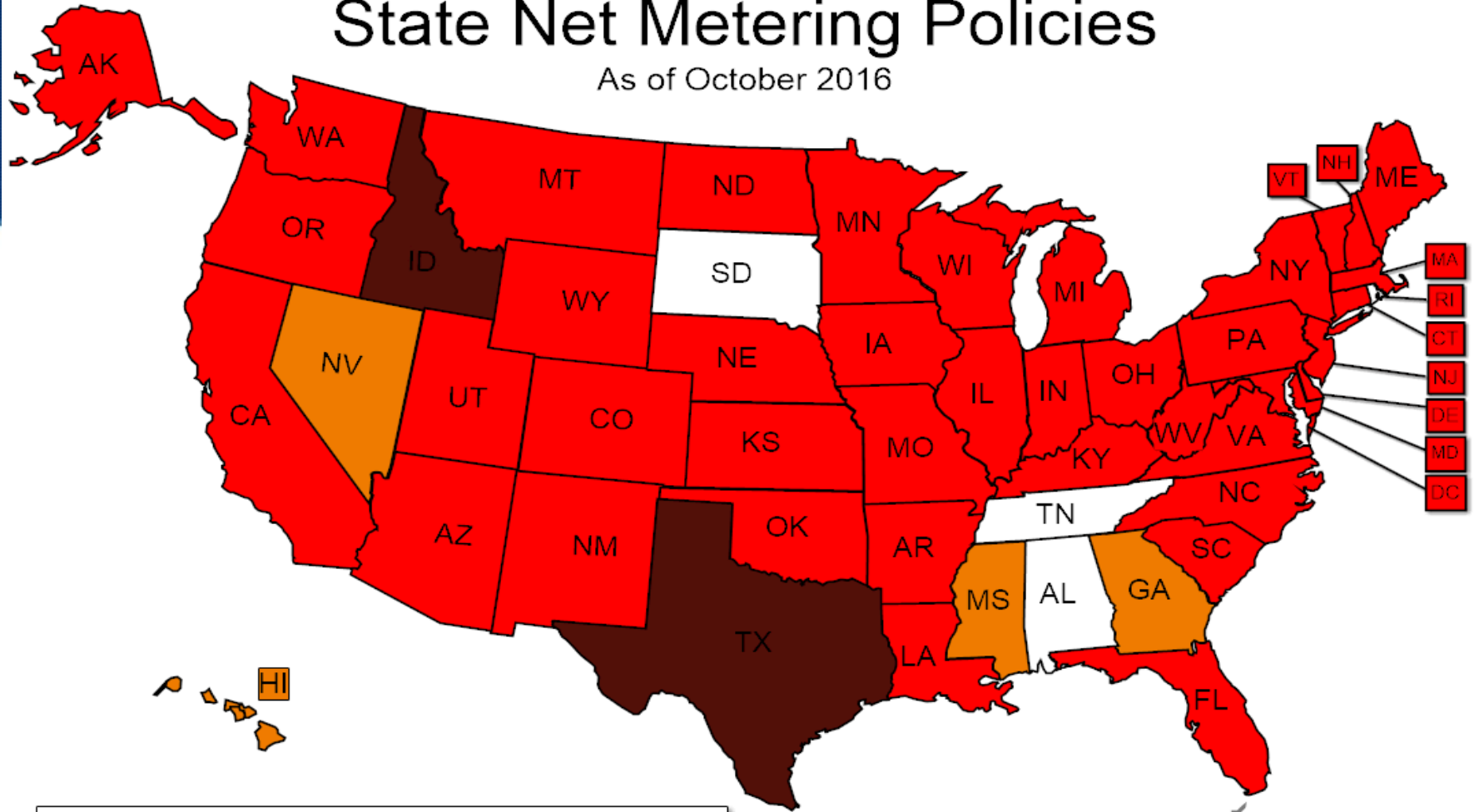
PV Costs



Source: Tracking the Sun IX: The Installed Price of Residential and Non-Residential Photovoltaic Systems in the United States. Lawrence Berkeley National Laboratory. August 2016.

State Net Metering Policies

As of October 2016



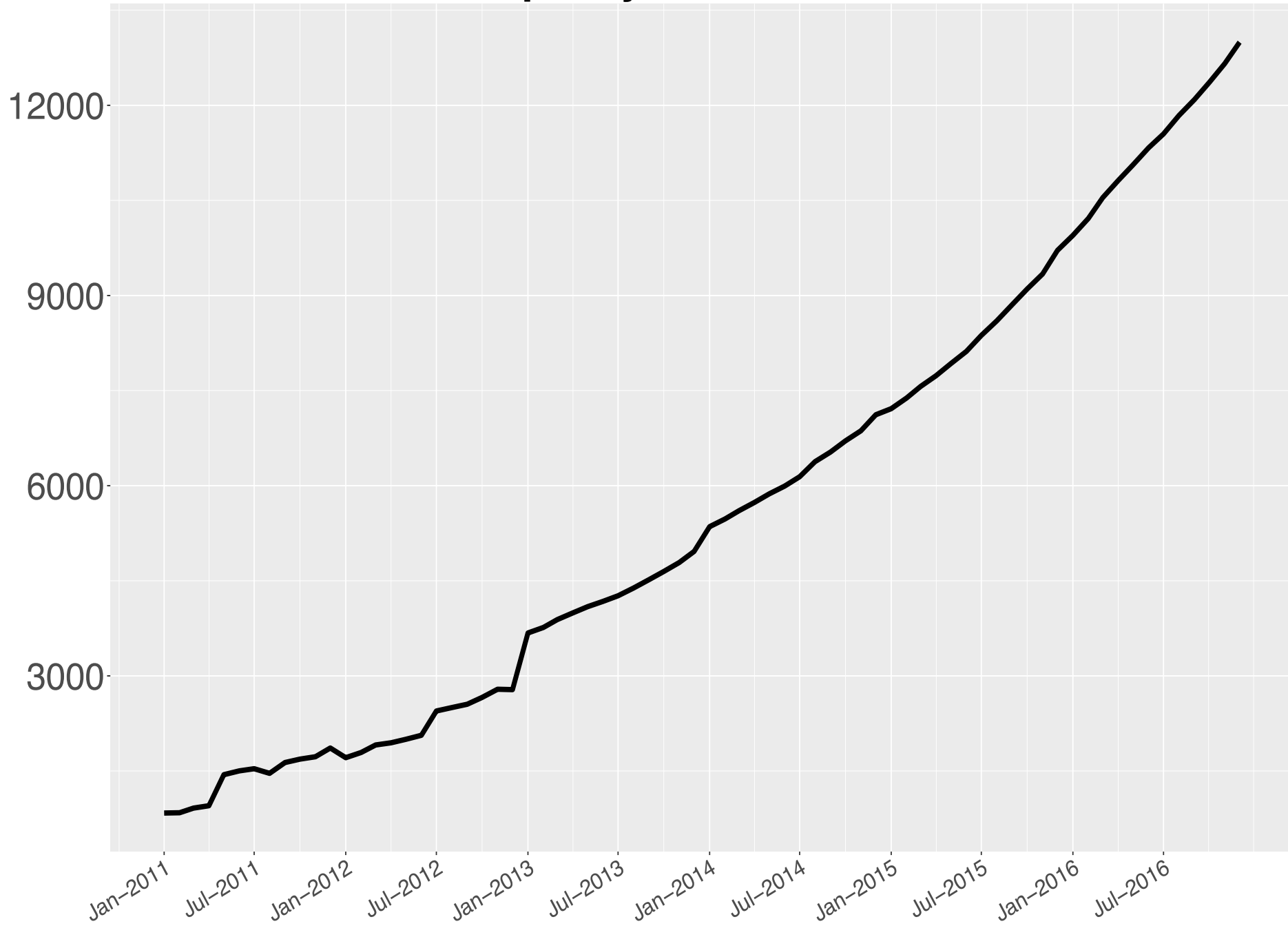
LEGEND

- States with Net Metering Policies
- States with Voluntary Utility Policies
- States with distributed generation compensation rules other than net metering


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Source: DSIRE, 2016

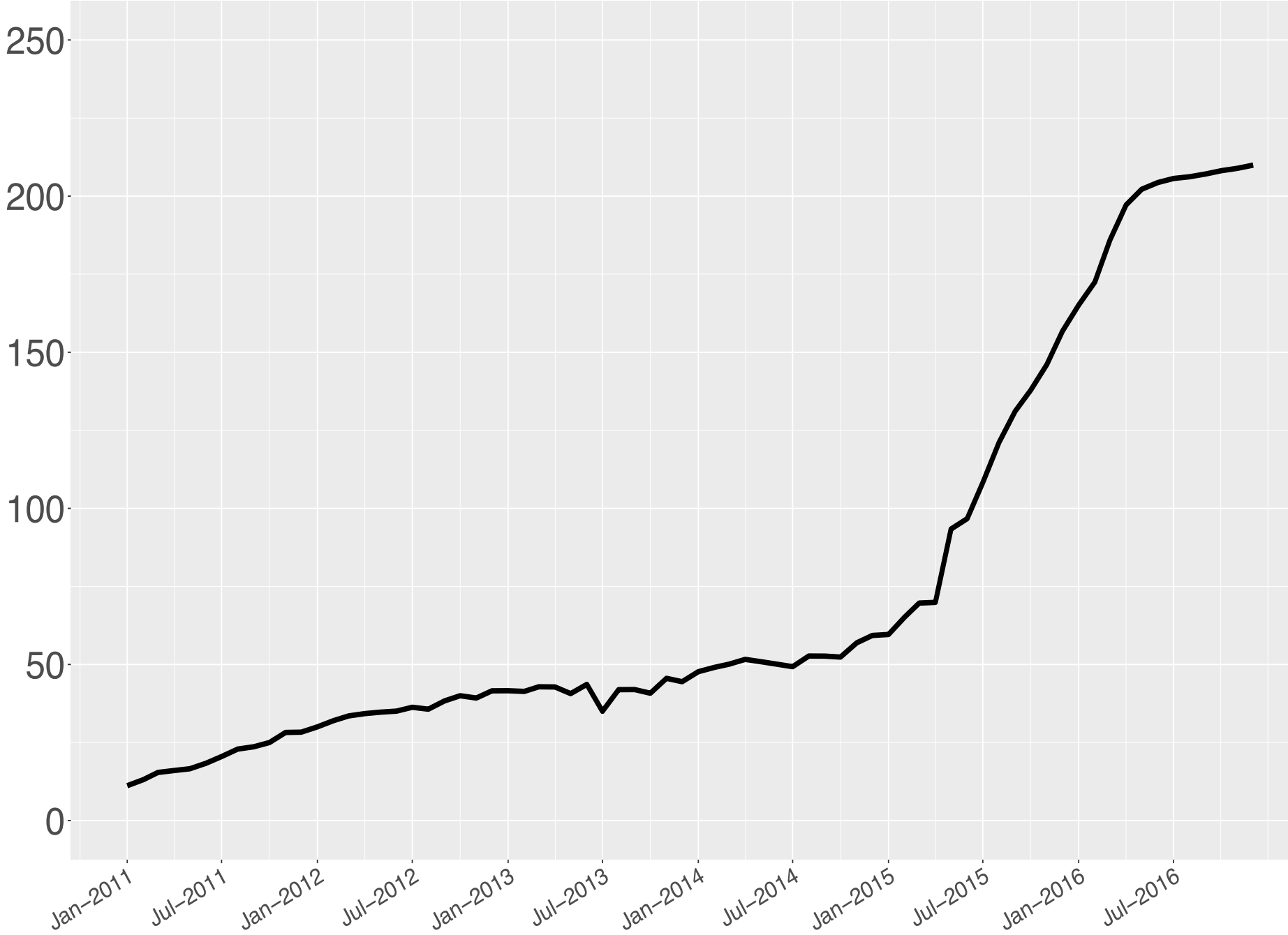
US NEM Installed Capacity in MW



NEM in Nevada

- Started in 1997
- Diversify the economy  Economic incentives
- SolarCity began marketing and accepting applications in May 2015

Nevada NEM Installed Capacity in MW



NEM in Nevada, contd.

- ◆ Renewable Portfolio Standard / RenewableGenerations Program
- ◆ The quota had to be shifted up in Summer 2015
- ◆ PUCN ordered economic investigations due to concerns regarding unfair cost shifting

Power Utility Economics 101: Why should there be any cost shifting?

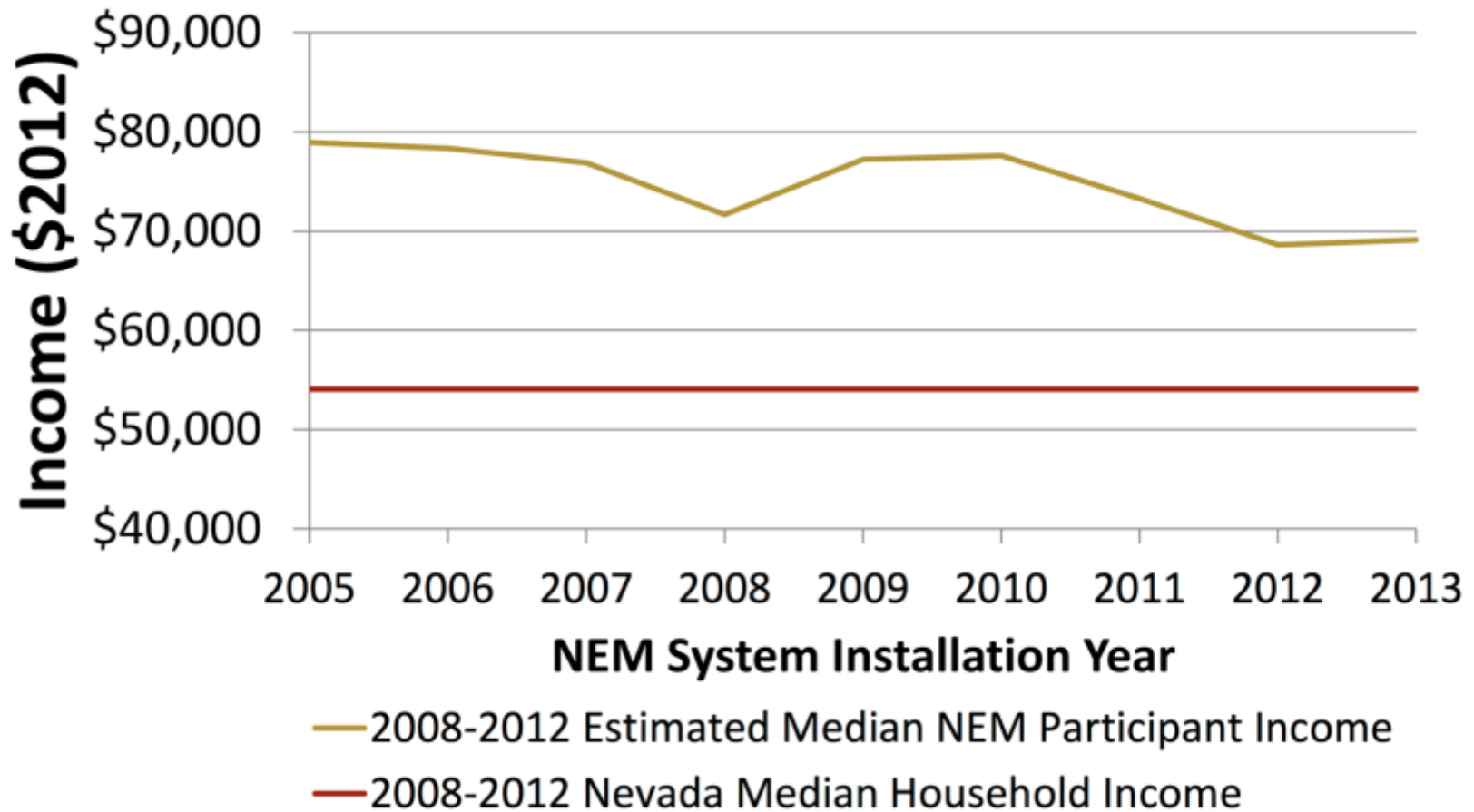
- ◆ Utility gets a REGULATED monopoly status and in exchange they provide
 - ◆ Universal access
 - ◆ Generation + Transmission + Distribution Capacity
 - ◆ Reliability
 - ◆ Rate cases
 - ◆ Compliance with other regulations, RPS etc.

Power Utility Economics 101: Why should there be any cost shifting?

- ◆ Recovery of the FIXED costs occurs mostly in a VARIABLE manner.
- ◆ Consume less energy \neq proportionate reduction in total costs.
- ◆ As a result, the utility would have to increase the rate for everyone else to recover the stranded costs

Power Utility Economics 101: Why should there be any cost shifting?

- ◆ Exports from NEM systems were getting credited at the retail rate ($\sim 11\text{c/kWh}$)
- ◆ The whole sale rate is variable, can get as low as 2c/kWh
- ◆ Utility can't refuse to buy



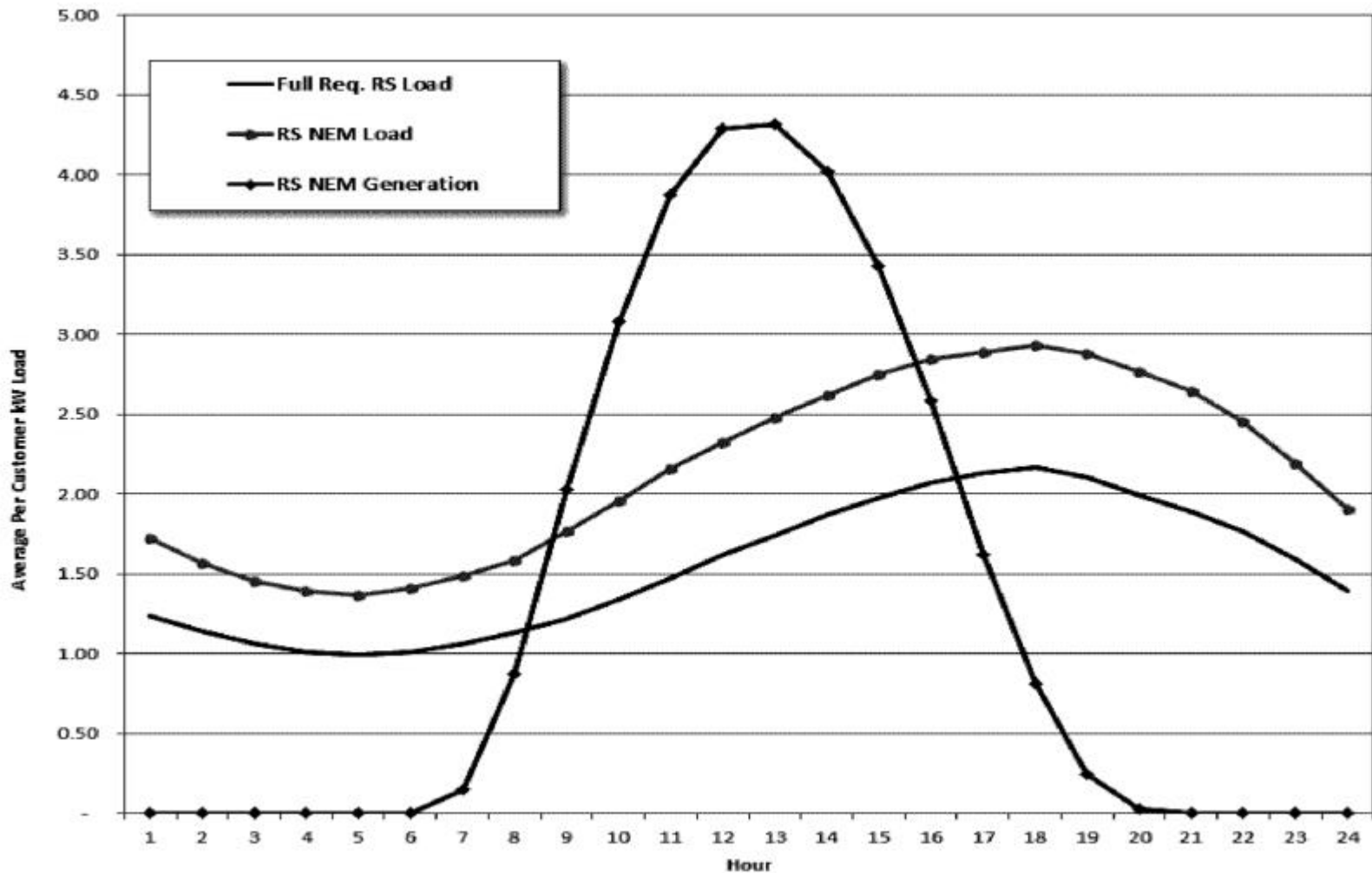
Source: Nevada Net Energy Metering Impacts Evaluation

Other Concerns Regarding NEM

- ◆ \$\$\$
 - ◆ Large scale costs less per Watt installed capacity
 - ◆ Generate more per installed capacity
- ◆ (Intermittency)²
 - ◆ Has not been a much of an issue in Nevada
 - ◆ Likely to get better with smart grid and home batteries
- ◆ Residential solar gets extra RPS credit

Potential Public Benefits of DG

- ◆ Avoided transmission losses
- ◆ Avoided need for infrastructure investments



Source: Public Utility Commission Docket 15-07041

PUCN Decision

Mark Ruffalo

- 🟢 PUCN Changed the NEM Rates
- 🟢 Existing customers were NOT grandfathered.
- 🟢 Big public backlash.



PUCN Decision

- ◆ In September 2016 PUCN decided to reverse the grandfathering decision.
- ◆ In May 2017 Nevada Legislature restored the favorable NEM rates for all customers.

Other Potential Benefits of NEM

- ◆ Spatial diversification.
 - ◆ Reduced need for cooling in the buildings
 - ◆ Easier on the ecosystem
- (compared to large scale solar)

Potential Private Benefits of NEM

- ◆ Warm glow
- ◆ Conspicuous consumption
- ◆ Freedom from the utility

Policy Recommendations

- ◆ Ambitious environmental goals
 - ◆ Reach them in the least cost manner
- ◆ Difficult to design a single rate to accurately capture all the costs and benefits for everybody

Policy Recommendations

- ◆ The costs and benefits are highly location and time specific
 - ◆ Granularity in the analysis will increase fairness
 - ◆ Using computerized grid models, 15-minute load and emissions data, and simulation.

Other Policy Concerns and Future Research

- ◆ Carbon credits
- ◆ Economics of energy storage
- ◆ Improving forecasting tools to mitigate intermittency
- ◆ Possibility of giving up control



Thanks!

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